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Application of thermal investigation methods in developing heavy-oil production technologies

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Abstract

© 2015 Springer Science+Business Media New York. The feasibility of applying thermal analysis to study of oil-containing rocks and organic matter is reviewed. Using heavy crudes from the Ashal'cha and Mordovo-Karmal fields, the potential for analysis of the effectiveness of iron-containing precursors of aquathermolysis catalysts is demonstrated with use of data derived from thermal analysis. The thermal effects detected in the presence of the catalyst precursor, as compared with the original sample, reflect decomposition of the catalyst precursor and degradation processes for the components of the crude oil activated by the catalyst. It is shown that use of thermal analysis is feasible for preliminary selection or optimization of catalyst compositions for in-situ upgrading of crude oils, taking into account the activity of the catalyst relative to certain components of the crude in a specific temperature range.

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Keywords

aquathermolysis, catalyst precursor, heavy oil, thermal analysis